

# Test Report

No.: CKGEC24001349201\_1

Date: Dec 09, 2024

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Client Name: MC-POWER SEMICONDUCTOR CO.,LTD

Client Address: 1 SHUANGXING AVENUE, HUANGJIA STREET, SOUTHWEST AIRPORT ECONOMIC DEVELOPMENT ZONE, SHUANGLIU DISTRICT, CHENGDU, CHINA (SICHUAN) PILOT FREE TRADE ZONE

Sample Name: Power elemen

Model No.: TO-220F

Client Ref. Information: TO-126 TO-263 TO-262 TO-251 TO-252 TO-220 TO-220FTO-220HF, TO-247 TO-247L TO-277 TO-3P TO-220C TO-247PLUS TO-263-7 TO-247-4-TO-264 GBU ABS MBS MBF DFN3\*3 DFN5\*6 DFN8\*8 SOP8 ESOP SOT-223 TOLL

The above sample(s) and information were provided by the client.

**THIS REPORT IS TO SUPERSEDE TEST REPORT NO.CKGEC24001349201, DATE: Dec 03, 2024.**

SGS Job No.: CQP24-012836

Sample Receiving Date: Nov 27, 2024

Testing Period: Nov 27, 2024 ~ Dec 03, 2024

Test Requested: Select test(s) as requested by the client.

Test Method(s): Please refer to next page(s).

Test Result(s): Please refer to next page(s).

Test Requirement	Conclusion
Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)	See Results
Lead, Mercury, Cadmium and Hexavalent chromium	See Results
Halogen	See Results

Signed for and on behalf of  
SGS-CSTC Standards Technical Services (Chongqing) Co., Ltd.

Amber Xu  
Approved Signatory

scan to see the report



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## Test Result(s):

### Test Part Description:

SN ID	Sample No.	SGS Sample ID	Description
SN1	A1	CKG24-0013492-0001.C001	Black body (mixed)
SN2	A2	CKG24-0013492-0001.C002	Silver metal pins

### Remarks:

- (1) 1 mg/kg = 1 ppm = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) “-” = Not Regulated

### **Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE), Bis(2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP), Dibutyl phthalate (DBP) and Diisobutyl phthalate (DIBP)**

**Test Method:** With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017 and IEC 62321-12:2023, analysis was performed by ICP-OES/AAS, UV-Vis and GC-MS.

Test Item(s)	Unit(s)	MDL	A1
Lead (Pb)	mg/kg	2	15535 <sup>▲</sup>
Mercury (Hg)	mg/kg	2	ND
Cadmium (Cd)	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	mg/kg	8	ND
Polybrominated biphenyls (PBB)	mg/kg	-	ND
Monobrominated biphenyl (MonoBB)	mg/kg	25	ND
Dibrominated biphenyl (DiBB)	mg/kg	25	ND
Tribrominated biphenyl (TriBB)	mg/kg	25	ND
Tetrabrominated biphenyl (TetraBB)	mg/kg	25	ND
Pentabrominated biphenyl (PentaBB)	mg/kg	25	ND
Hexabrominated biphenyl (HexaBB)	mg/kg	25	ND
Heptabrominated biphenyl (HeptaBB)	mg/kg	25	ND
Octabrominated biphenyl (OctaBB)	mg/kg	25	ND
Nonabrominated biphenyl (NonaBB)	mg/kg	25	ND
Decabrominated biphenyl (DecaBB)	mg/kg	25	ND
Polybrominated diphenyl ethers (PBDE)	mg/kg	-	ND
Monobrominated diphenyl ether (MonoBDE)	mg/kg	25	ND
Dibrominated diphenyl ether (DiBDE)	mg/kg	25	ND
Tribrominated diphenyl ether (TriBDE)	mg/kg	25	ND
Tetrabrominated diphenyl ether (TetraBDE)	mg/kg	25	ND
Pentabrominated diphenyl ether (PentaBDE)	mg/kg	25	ND
Hexabrominated diphenyl ether (HexaBDE)	mg/kg	25	ND
Heptabrominated diphenyl ether (HeptaBDE)	mg/kg	25	ND



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Test Item(s)	Unit(s)	MDL	A1
Octabrominated diphenyl ether (OctaBDE)	mg/kg	25	ND
Nonabrominated diphenyl ether (NonaBDE)	mg/kg	25	ND
Decabrominated diphenyl ether (DecaBDE)	mg/kg	25	ND
Di-2-Ethyl Hexyl Phthalate (DEHP)	mg/kg	50	ND
Benzyl Butyl Phthalate (BBP)	mg/kg	50	ND
Dibutyl Phthalate (DBP)	mg/kg	50	ND
Diisobutyl Phthalate (DIBP)	mg/kg	50	ND

**Notes:**

- (1) IEC 62321 series is equivalent to EN 62321 series.
- (2) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.
- (3) ▲=According to the declaration from the client, Lead (Pb) in No.A1 is exempted by EU RoHS directive 2011/65/EU based on [ANNEX III 7(a)]: Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead).

**Lead, Mercury, Cadmium and Hexavalent chromium**

**Test Method:** With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013 and IEC 62321-7-1:2015, analysis was performed by ICP-OES/AAS and UV-Vis.

Test Item(s)	Unit(s)	MDL	A2
Lead (Pb)	mg/kg	2	10
Mercury (Hg)	mg/kg	2	ND
Cadmium (Cd)	mg/kg	2	ND
Hexavalent Chromium (Cr(VI)) ▼	µg/cm <sup>2</sup>	0.10	ND

**Notes:**

- (1) IEC 62321 series is equivalent to EN 62321 series.
- (2) ▼ =
  - a. The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13 µg/cm<sup>2</sup>. The sample coating is considered to contain Cr(VI).
  - b. The sample is negative for Cr(VI) if Cr(VI) is ND (concentration less than 0.10 µg/cm<sup>2</sup>). The coating is considered a non-Cr(VI) based coating.
  - c. The result between 0.10 µg/cm<sup>2</sup> and 0.13 µg/cm<sup>2</sup> is considered to be inconclusive-unavoidable coating variations may influence the determination.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(VI) results represent status of the sample at the time of testing.

**Halogen**

**Test Method:** With reference to EN 14582:2016, analysis was performed by IC.



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Test Item(s)	Unit(s)	MDL	A1
Fluorine(F)	mg/kg	20	ND
Chlorine(Cl)	mg/kg	50	81
Bromine(Br)	mg/kg	50	ND
Iodine(I)	mg/kg	50	ND

Remark: (1) The sample(s) A1 was/were analyzed on behalf of the applicant as mixing sample in one testing. The above result(s) was/were only given as the informality value and only for reference.

Remark: This report updates notes.

Unless otherwise stated, the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule ( $w=0$ ) stated in ILAC-G8:09/2019.



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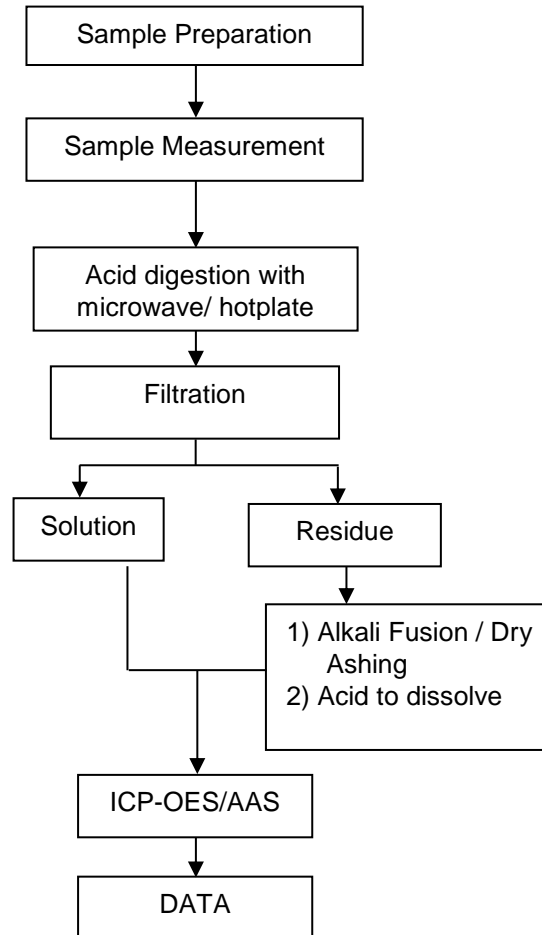
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### Elements Testing Flow Chart

These samples were dissolved totally by pre-conditioning method according to below flow chart.



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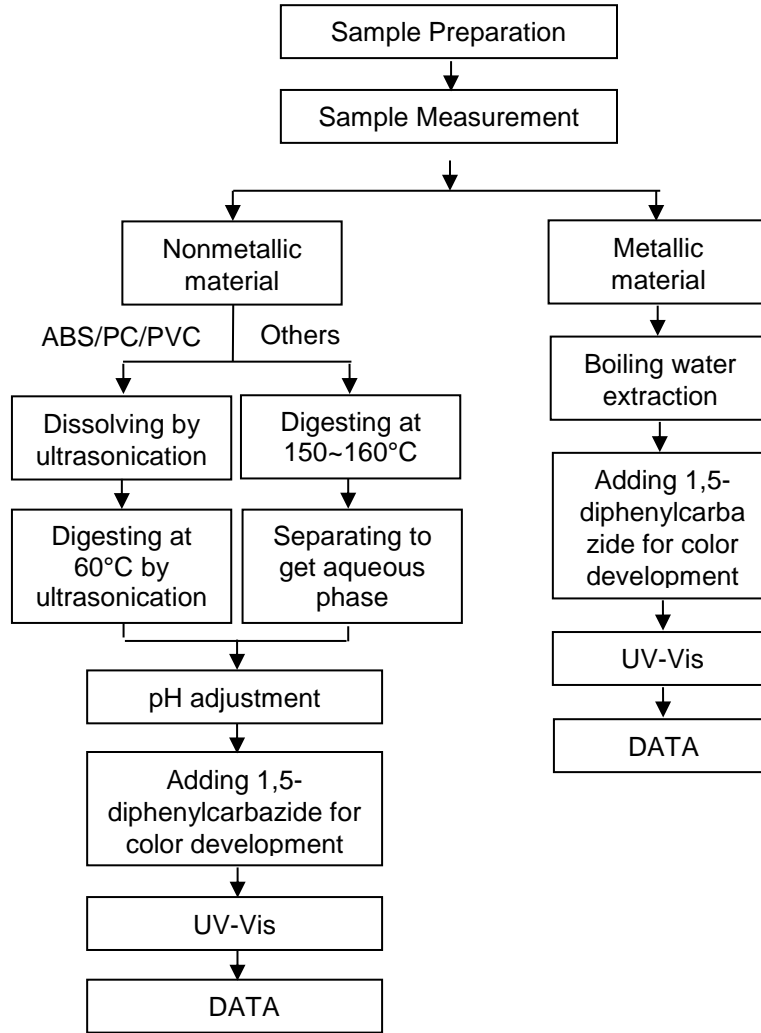
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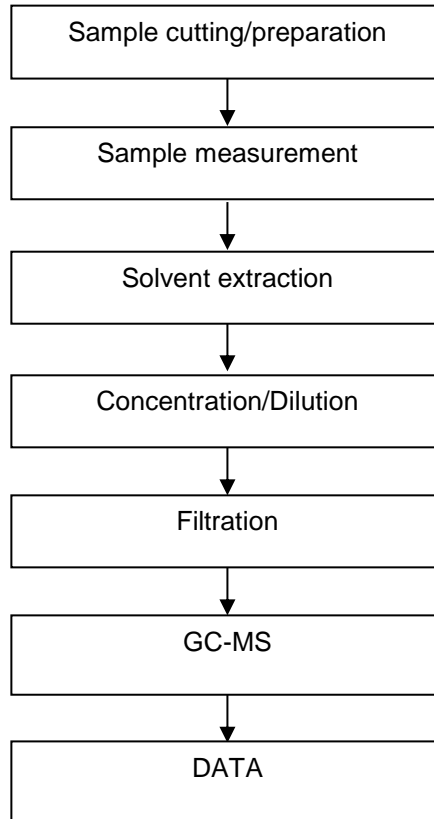
**Hexavalent Chromium (Cr(VI)) Testing Flow Chart**



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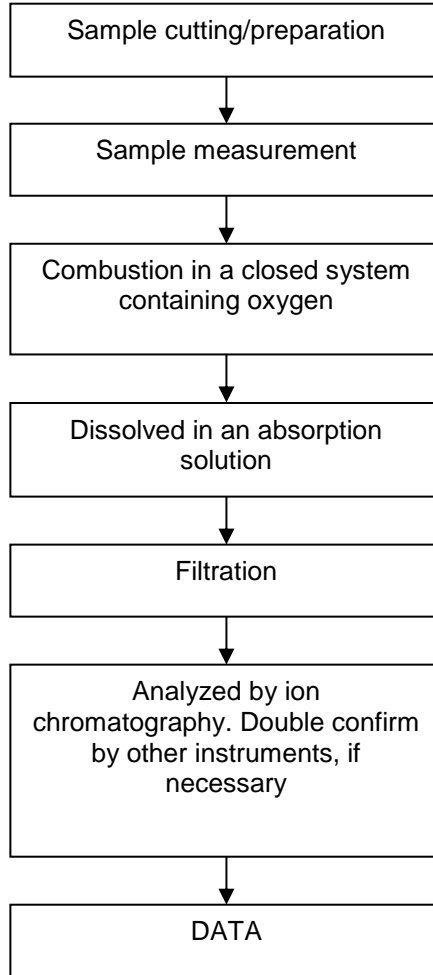
### PBB/PBDE/Phthalates Testing Flow Chart



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### Halogen Testing Flow Chart



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### Sample Photo:



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